Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.

A281.9 Reserve
Ag83E

ERS-322

LIVESTOCK MARKETING

Reprinted from Agricultural Markets in Change,
Agricultural Economic Report 95

TRI-AGENCY READING ROOM

MAR 24 1972

500 12th St. S.W.
Washington, D. C. 20250

ECONOMIC RESEARCH SERVICE
U.S. DEPARTMENT OF AGRICULTURE

Page

Introduction 258
  Cattle and calves. . . . 258
  Sheep and lambs. . . . 259
  Hogs 259
  Marketing services 260
Farm to market 260
  Assembly 260
  Transportation 260
  Marketing agencies 261
  Feeder livestock 263
  Meatpacking. . . . 265
  Meat wholesaling 269
  Meat retailing 270
  Supporting services. . . . 277
Livestock production and consumption 279
  Developments in the demand for meat. . . . 279
  Developments in livestock production 282
Current problems--future developments. . . . 286
  Current problems 286
  Accommodating changes. . . . 289
Summary. . . . 291
Selected references. . . . 292

October 1966

LIVESTOCK MARKETING

By Willis E. Anthony and William C. Motes
Agricultural Economists

INTRODUCTION

Livestock marketing begins at the point where livestock is sold by the producer and ends where meat is purchased by the consumer. To function well, the livestock marketing system must do a number of things efficiently in each of its phases: livestock must be assembled, transported, and bought and sold with minimal delay, movement, and cost; livestock must be converted into many kinds of meat and meat products at the lowest possible cost; timely marketing information must be made available to help buyers and sellers channel meat to consumers in an orderly manner; human health must be safeguarded; and consumer demand must be reflected through the entire system to enable producers to correctly plan their production and marketing.

Economic competition among firms and among geographic regions is sharp and continuing. New technologies and changing cost structures have shifted the relative advantages among locations and among firms. The less efficient firms have been supplanted by the more efficient. In a few regions, production and processing have sharply increased, frequently at the expense of other regions. As characteristics of livestock production, meatpacking, processing, transportation, and food retailing change, functions of other marketing units also change.

Cattle and Calves

Cattle and calves enter the marketing system in many ways. First, they may be sold for slaughter as calves, as are many dairy-bred calves not destined as dairy herd replacements. Most calf slaughter is thus a byproduct of the dairy industry. Many feeders feel that dairy-type calves require more grain than beef-type calves for feeding to mature slaughter weights and grades, and a larger proportion of dairy calves are slaughtered. The price relationships among calves, slaughter cattle, and concentrate feeds sharply affect the share of the calf crop that is slaughtered.

Second, cattle may be marketed as feeders for feedlots. They will again enter marketing channels after being grain fed to slaughter grades. Most feeder cattle still come from western ranges and are placed on feed in the Corn Belt, but the number of western feeder cattle in western feedlots has increased. Increased feeder calf production in the Southeastern States has added a new source for Corn Belt, southern, and western feedlots.

Thirdly, mature cattle may be marketed for slaughter. Except for cull breeding and dairy stock, this group comes from feedlots and produces high-quality beef. Most grain-fed cattle have traditionally come from the Corn Belt. Since World War II, the cattle-feeding industry has found favorable locations in Colorado, Arizona, and California, and the southern Plains. Feedlots in these areas tend to be very large commercial feedlots handling large numbers of cattle and to be operated as a separate enterprise, rather than in conjunction with a farm.

About 40 percent of the beef consumed in the United States is ground or processed. Two major sources of this beef are cows culled from dairy or beef herds, and imports. The importance of these sources varies sharply from year to year. When cow herds are being built up in expectation of high cattle prices, fewer cows are sold. Attractive cow and cow beef prices bring in larger amounts of imports. Low cattle prices discourage ranchers, causing herd reduction and increased cow slaughter, and the resulting low-grade manufacturing beef prices reduce imports.

Sheep and Lambs

In the early history of the United States, sheep were produced almost exclusively for wool. As population increased and other fibers became more common, lamb and mutton became more important. In the last 30 years, lamb rather than wool has become the major source of income for sheep producers.

Most lamb is produced on the western ranges where there are large flocks of sheep, although many lambs are also produced in smaller farm flocks in other parts of the country.

Some lambs are marketed as milk-fed slaughter lambs. The rest are either grain fed by the producer or sold as feeder lambs. Most feeder lambs from the western range go to either western or Corn Belt feedlots. The principal lamb-feeding States are in the Corn Belt.

Hogs

In the United States, hogs are largely produced by farm units which raise pigs and grain feed them, and produce much of the required grain as well. Recently, there has been considerable interest in the potential of vertical integration in hog production by feed manufacturers and other nonfarm segments of the agricultural economy. Nevertheless, hog production remains basically a family farm enterprise, although hog enterprises have become larger. The proportion of hog farms with 10 or more litters farrowed increased from 29 percent in 1949 to 35 percent in 1959, and the average number of hogs sold per hog farm increased 60 percent in 1954-59.

About 1950, many farms began separating feeder pig production from hog feeding. An increasing number of producers have begun to specialize in feeder pigs, leaving hog feeding to those with advantages in feed production. Also, some large production units have been organized to produce pigs and feed hogs in factory-type units. An earlier trend toward large hog-feeding enterprises near urban areas has declined; this may be due chiefly to sanitary restrictions on garbage feeding.

Even before World War II, hog producers recognized the need for a leaner, meatier hog to conform to changing taste patterns of U.S. consumers. Many observers feel that the hog carcass has not been modified rapidly enough, and that this has accentuated a downward shift in demand for pork. Some contend that the pricing system has not made hog producers sufficiently aware of the changing tastes of pork consumers. Consequently, there has been considerable interest in techniques to improve the efficiency of the pricing system. Among these are grade and yield selling, and systems of premiums and discounts for lean and fat hogs.

Marketing Services

The services that transform livestock into meat on the consumer's table cut across several industries. These include the livestock and meat trade, trade in the many byproducts of meat production, and services which facilitate operation of firms and conduct of trade. However, this discussion centers on livestock assembly, meatpacking, wholesaling, and meat retailing.

FARM TO MARKET

Assembly

Livestock are usually bought and sold for one of two purposes--immediate slaughter or placement in feedlots or breeding herds. They are sold direct, through auctions, or through terminal markets. Stocker and feeder animals are often sold direct to ranchers and feeders; slaughter stock are often sold direct to meatpackers. Both auctions and terminals handle slaughter as well as nonslaughter livestock. There have been similar shifts among marketing channels for both classes of livestock.

The term "livestock assembly" is used to describe the general process of bringing together livestock for feeding, breeding, or slaughter. It is descriptive of operations of the packer who gathers a sufficient number of slaughter livestock at one location to efficiently employ his specialized labor and machinery, and of large feeders who require large numbers of animals. However, it is less descriptive of the operations of many feeders who go to ranches to buy small numbers of replacement stock.

The livestock seller often pays most of the assembly costs, although packers and feedlot operators pay their own buyers. Charges associated with hauling livestock to market and handling them on the market have traditionally been paid by the seller. As more and more livestock move directly to packers or to feedlots, some charges formerly paid by the seller are shifted to the buyer. For example, the cattle feeder may buy and haul his feeder stock from the range to the feedlot. More and more, packers and feeders are buying directly and paying their own buyers or commission men to purchase livestock from the ranchers or feeders. In general, ranchers and feeders are bearing fewer direct selling charges than they did 10 or 20 years ago. When the buyer assumes these transaction costs, he attempts to adjust prices to compare with market prices where transaction costs are allocated differently.

The assembling of livestock may take several forms and be initiated by either buyer or seller, but it has two essential elements: (1) the sale of animals, and (2) the transportation of the animals to a livestock terminal, auction, feedlot, or slaughter plant. Assembly costs depend on the market used, the distance to market, and the services required.

Transportation

Often the largest marketing cost for producers is transportation of animals to market. There are two dimensions to be considered in transportation: (1) the total amount, or cost, of transportation required; and (2) its flexibiltiy and adaptability to alternative marketing outlets. The most important developments in transportation have been the advent of the motortruck and improvement in the highway system.

Truck transportation became common after World War I. It has made possible loading animals at the farm and moving them directly to point of sale, eliminating on-foot travel or reloading en route to market. It has also increased the flexibility of livestock marketing for the producer by giving him access to a larger number of sales outlets. For these reasons, truck transportation has become the most common means of moving livestock. Truck shipments account for the majority of receipts at terminal stockyards. Practically all livestock sold at auction markets and most livestock shipped direct to packers from feedlots are hauled by truck.

Generally, shipments to terminal markets involve longer distances and cost more than shipments to other points. Rail shipments are commonly used only for long-distance livestock shipment. Sales through auction markets involve the shortest hauls.

Marketing Agencies

Livestock producers usually have several channels for marketing their livestock--public terminal stockyards, local organized auction markets, direct sale to meatpackers or sale to livestock dealers.

Terminal markets, a prominent institution in livestock marketing, were made possible in the 19th century by development of the railroad system, coupled with technological developments in meatpacking.

Terminal Markets

At terminal markets there are physical facilities for handling and caring for livestock, commission agents to handle market transactions, and nearby slaughter facilities of meatpackers. Until livestock producers widely adopted the motortruck, terminal markets handled most livestock marketing transactions in the United States. In 1923, slaughterers with federally inspected operations purchased 90 percent of their cattle, 86 percent of their calves, sheep, and lambs, and 77 percent of their hogs at terminal markets. Since the 1920's, however, livestock receipts at terminal markets have shown diverse trends. Cattle receipts increased; calf receipts remained relatively stable; hog receipts declined; and sheep and lamb receipts declined. In the past decade, terminal market receipts of all species have shown a persistent decline. Percentage of total slaughter marketed through terminal yards has declined as well. In 1964, packers purchased 37 percent of their cattle, 19 percent of their calves, 24 percent of their hogs, and 29 percent of their sheep at terminal markets.

Many factors have combined to lessen the importance of terminals: (1) increasing importance of truck transportation on an expanded network of roads, allowing producers to select from a larger number of market outlets; (2) development of auction markets; (3) location of meatpacking plants at points away from terminal markets; (4) establishment of country buying stations by meatpackers; (5) congestion of metropolitan areas around terminal markets, making them less convenient for the livestock producer; and (6) expanded market news coverage, diminishing importance of close contact with the terminals for essential market intelligence.

Auctions

Although auctions were held very early in U.S. history, livestock auction markets as institutions with physical facilities did not become common until the early 1900's. During the 1930's there was extremely rapid growth in auction marketing. In 1930, there were an estimated 200 auction markets in the United States, and by 1940 there were 2,000 such markets. The number continued to increase until it reached a peak of 2,500 in 1952. Since then, there has been a slight downtrend in numbers.

Many factors contributed to the relative decline of terminal markets while contributing to the expansion of auction markets:

> Several important factors contributed to the pronounced expansion of auction markets during the thirties. These factors are associated with the trend toward a decentralized livestock marketing system which has been occurring over the last 25 years. A development of primary importance was the improvement and extension of hard surfaced roads accompanied by the increased use of motor carriers as a means for transportating livestock to and from the market place. Use of trucks increased flexibility in the handling of various sized lots of livestock and in the directions of movement. With the advent of better roads, trucks could be used for transporting livestock moderate distances both quickly and economically. Growing numbers of packers, located at points away from terminal markets, were able to purchase livestock more efficiently at auction markets. Other factors leading to the growth of auction markets were the development of more uniform grade and weight classifications for livestock and improvements made by the Federal Government in providing more extensive collection and dissemination of Market News (16, p. 5). 1/

Other developments may also have contributed to the growth of auction markets. During the 1930's depressed livestock prices caused fixed terminal marketing charges and transportation rates to terminal markets to represent a higher proportion of the sales dollar than did the costs of marketing at local auctions. At that time, auction charges were levied as a percentage of receipts. Besides this, the intangible factor of social satisfaction from attending auction sales has been suggested as a reason for their popularity.

In 1964, meatpackers purchased 19 percent of their cattle, 50 percent of their calves, 13 percent of their hogs, and 14 percent of their sheep through auction markets. Auction markets are more important, however, if total livestock sales are considered. A high proportion of feeder livestock is marketed through auctions. Further, auctions are the largest market channel for all livestock species in some areas, particularly in the South.

Costs of marketing livestock through auctions vary by region. Methods of assessing charges differ. Some markets charge a fixed amount per head; others, a combination of a flat charge per head and a percentage of value; still others, a percentage of value. A straight charge per head appears to be the most common assessment.

Before the organization of terminal stockyards, most livestock was sold in the country--frequently to livestock dealers doing business directly with farmers, or directly to other farmers or slaughterers. Since 1920, livestock dealers have again figured more prominently in livestock marketing. Trucks have made it possible for a dealer to cover a wide area and to conduct a much larger amount of business than he could from an office. It is difficult to obtain reliable data on the amount of local dealers' marketing, because much of the livestock they handle never enters recorded marketing channels.

1/ See Selected References, p. 292.

Direct Sales

Direct sales to packers have increased, as meatpackers have continued to locate plants in producing areas (away from terminal markets). In 1964, packers purchased 45 percent of their cattle, 32 percent of their calves, 63 percent of their hogs, and 58 percent of their sheep directly from producers and through country dealers. Much of this livestock was sold directly to packers or to packer buying stations located in the country. But direct sales vary widely by area. In the Western Corn Belt, for example, the largest share of hogs is sold direct, while in the South, auctions handle a greater proportion of livestock sold.

No marketing charges other than transportation are normally associated with marketing livestock directly to packers. Many direct sales are made on the basis of some predetermined calculated "shrink." This means that the buyer deducts a proportion of the animal's weight, supposedly to account for weight loss. "Shrink," or "pencil shrink," varies widely, commonly ranging from 2 to 5 percent. These figures are actually bargaining bases and only indirectly related to actual weight loss. Aside from "pencil shrink," meatpackers purchasing through hired livestock buyers bear marketing costs of direct sales. Country dealers normally buy and sell on their own account and depend on profits from their transactions to cover costs.

Slaughter livestock have usually been sold on a live weight basis in dollars per hundredweight--the method of sale with which livestock producers are most familiar. Determination of the value of the animal depends on the judgment of the buyer and the seller. In recent years, an increasing share of slaughter livestock has been sold on a "grade and yield" basis; that is, the packer makes a price bid contingent on the quality of the carcass as well as its weight.

Carcass grade and yield selling tends to focus the marketing transaction on the actual meat yield--the amount and quality of meat contained in the livestock. It is an increasing, but not yet widespread, method of marketing. In 1961, grade and yield marketing accounted for 4.2 percent of cattle slaughter, 1.8 percent of calf slaughter, 2.2 percent of hog slaughter, and 3.6 percent of sheep slaughter. Many barriers have retarded the use of grade and yield marketing. Chief among them, probably, is the lack of familiarity of farmers with the mechanics of the operation and the necessary calculations required to compare prices and net returns. Livestock producers have also tended to lack confidence in grade and yield selling. Many producers are suspicious of a marketing system where livestock quality and returns to the producer are determined by an unseen and unknown individual employed by the buyer after the sale is made. In some cases, producers' suspicions about the system have been justified. Many observers suggest that proliferation of grade and yield selling has suffered from the absence of a truly neutral third party to assess carcass quality.

Feeder Livestock

As long as livestock moved principally by rail, terminal markets handled nearly all feeder as well as slaughter livestock. In recent years, particularly since World War II, livestock feeders have relied more heavily on commission buyers, auction sales, and direct purchases.

Evaluating and pricing feeder livestock, especially feeder cattle, is one of the most difficult arts of husbandry. It is necessary to estimate the expected development and growth of the animal over a period of several months, and the expected quality, size, and appearance of the animal when it is mature. Federal grades for feeder livestock have been developed, but the industry has not put them into widespread use. Rather, feeders prefer their own personal judgment or that of a buyer they know and trust. Increasingly, feeders are developing and depending on performance records of feeder livestock. By this means they can determine which ranchers, areas of the country, and breed types have produced especially good or especially bad feeder livestock.

Producer groups in many areas have formed marketing cooperatives and organized feeder sales. By assembling large numbers of feeders, producers are better able to advertise and can attract buyers from greater distances. These sales have been increasingly successful and are becoming an important feature of feeder calf marketing.

Feeder sales are distinct from the ordinary livestock auction in that they are organized for specific sales and are held only at specified times during the year. Detailed description of livestock consigned for sale is provided in the advertising material. Sales are coordinated among producer groups so that buyers will find it convenient to attend. The typical auction market, on the other hand, operates each week and has no advance description of the livestock that will be put up for sale.

One other distinctive feature of feeder livestock marketing is that a large proportion of the direct sales are made under contracts for future delivery. Negotiations and sales are handled in about the same way as ordinary direct sales in that the feeder or his representative evaluates the livestock and negotiates the price. However, delivery is for a later date, depending on range conditions, feed supplies, and expectations for the slaughter markets.

Assembly of both slaughter and feeder livestock is the first stage of livestock marketing.

Feeder livestock prices are particularly difficult to evaluate because a large proportion of sales are unreported and because quality is extremely difficult to judge. As a result, less information is available to buyers and sellers in these markets than is available in markets for slaughter livestock.

Assembly of both slaughter and feeder livestock is the first stage of livestock marketing. Concentrate feeding is the second stage for more than half the cattle slaughtered, nearly all the hogs, a varying but large proportion of the sheep, and some calves. Feedlots vary in size from those accommodating a few head of livestock to those handling many thousands, and exist in all parts of the United States, but principally in the Corn Belt. Concentrate feeding is rapidly increasing in importance in the Far West, in Colorado and Arizona, and on the High Plains, where new feeds and new technology are being combined ingeniously to overcome at least part of the Corn Belt's longstanding advantage in concentrate feeding.

Meatpacking

The range of activities at this level includes converting livestock into carcass, as well as various processing operations, including dividing carcasses into primal 2/ or portion-sized cuts, curing, smoking, grinding, and mixing meats into a vast array of products. Meatpacking must take place rapidly under scrupulously sanitary conditions, and fresh meat must be moved quickly to retailers and consumers. Conditions of processing and transportation must be precisely controlled.

✓ Meatpacking is a complicated industry that is roughly the opposite of most industries, which take a number of raw materials and combine them into finished products. A meatpacker takes a complicated raw material, the live animal, and disassembles the carcass into parts. Much of this meat is consumed after little further processing, but a great deal of it goes into meat products. Processed meats are very profitable to meatpackers. The packer's skill in handling byproducts and channeling the parts of each carcass to their most profitable use often makes the difference between his success or failure.

Development

In the early stages of U.S. agriculture, commercial meatpacking was primarily a local enterprise. Butchers purchased livestock from farmers, slaughtered it, cut and trimmed it, made sausage, hams, and other products, and sold them over the counter at the front of the shop. Some of the bigger firms packed barrels of salt pork and pickled beef for shipment from east coast seaports. Meatpacking followed this pattern until improved techniques and equipment--such as refrigeration--became available.

In the 1880's, several developments in meatpacking appeared in fairly rapid succession. New techniques were developed to increase the scale of pork curing and packing plants, and then extended to beef packing. Refrigeration equipment for plants and railroad cars made long-distance shipment of fresh meat feasible. Concentration of population in urban centers, dependent on a commercial meat supply, increased. Railroad transportation networks were centered on a few terminal points, and enterprising individuals organized meatpacking firms on a large scale.

2/ A trade term for a category of wholesale cuts.

The first packing plants were near eastern cities. Plants were later built at railheads near sources of extensive livestock supply in Cincinnati and Chicago, and later at terminals along the Mississippi and Missouri Rivers. Terminal stockyards appeared, to accompany these plants. The hub of the meatpacking industry quickly moved to the Midwest. Finally, the large national packers with branch houses located in metropolitan centers became the dominant suppliers of meat for the Nation.

As the giant meatpacking firms became more and more powerful, they were regarded with considerable suspicion and hostility by producers and consumers. Accusations of monopolistic practices multiplied in the two decades after 1900. Public opinion exerted strong pressures and culminated in an investingating commission authorized by President Wilson. The fruits of the commission were consent decrees, entered into by the five leading meatpackers in 1920, and the Packers and Stockyards Act, signed into law in 1921. Under terms of the decrees, the consenting firms were required to divest themselves of their holdings in stockyards, terminals, and warehouses, and to disassociate from meat retailing and from handling specified classes of other food products.

However, the large meatpackers retained their branch-house distribution systems which performed the wholesaling function in meat merchandising. Branch houses located in most large cities were an important link in the meat distribution system. Meat was retailed principally by local butcher shops, which purchased carcasses and processed meat from meatpackers. The packers' salesmen took orders from the small retailers, and meat was supplied to them from branch houses where the cutting, trimming, and processing was done to the retailers' specifications.

The large meatpackers supplemented their branch-house system with rail car-route networks. A traveling packer salesman took orders from customers located near railway lines branching out from the central packing plant. When the sales orders were received at the plant, a refrigerator car was loaded and began moving down a rail line. Customers received their meat as the car arrived at their railway station along the route. While a car-route network generally supplemented a meatpacker's branch-house system, the two distribution systems sometimes competed with each other. The profile of the industry was one in which a few large meatpacking firms processed the majority of slaughter livestock at terminal stockyards and supplied many small retailers through a wholesale system of branch houses and car routes.

Between World Wars I and II, packers found branch houses increasingly expensive to maintain. Meat retailing passed from butcher shops to the growing grocery supermarkets. Slaughter plants, located in concentrated livestock feeding areas away from the terminal stockyards and often unaffiliated with the previously dominant national packers, began to do an increasing proportion of slaughter and to sell directly to retailers without using branch houses. After World War II, developing supermarket chains began to assume more wholesaling functions. Usually the new meatpacking firms did not have extensive distribution networks and, thus, were willing to sell unbranded meat to the growing chains. These firms, unhampered by investments in old plants, were in a position to take advantage of the changing needs of livestock producers by building new plants in the feeding areas.

Technology played a significant role in altering the structure of the meatpacking industry. The large national packers invested heavily in new plants around 1920. These plants were huge, full-line, integrated plants designed to use a central power plant and a large pool of assembled livestock. For the most part, the competitors copied this plant design, but built their plants in the Corn Belt areas. The changing technology of transportation and economic disturbances of the 1920's and 1930's made the interior plants somewhat more attractive markets and gave them the competitive edge they needed to gain a foothold. Between World Wars I and II these firms prospered more than the terminal plants, but by the midfifties, developments in plant technology and transportation had made many of the large plants obsolete. Some plants were completely renovated, but with only mixed success. Today's competitive plants are different in design and are dispersed throughout the country in nearly all producing areas.

The national packers lost a significant share of the market between 1920 and 1965, but the firms which were their competitors in the 1920's are also losing part of their share to a wave of still small competitors.

Current Industry Structure

Changes in the structure of the meatpacking industry since 1920 have been significant. Many of these changes have come since 1950. Commercial slaughter, reflecting expanding livestock production, increased considerably between 1950 and 1964 (table 1). 3/

Table 1.--Commercial livestock slaughter, United States, 1950 and 1964

Species	1950 slaughter		1964 slaughter	
	Total	Under Federal inspection	Total	Under Federal inspection
	1,000 head	Percent	1,000 head	Percent
Cattle.........	17,900.7	73.2	30,818.0	81.6
Calves.........	9,972.6	58.7	7,254.0	66.4
Sheep..........	12,852.3	91.3	14,595.0	88.7
Hogs...........	69,543.4	81.9	83,019.0	86.3

The extent of the locational change in the slaughtering industry in recent years is highlighted in table 2. 4/ There has been a tendency for slaughter plant location to follow livestock production. The Corn Belt is still the dominant livestock producing area and the principal location for meatpacking plants, but less so than formerly. The Southwest and West experienced both an absolute and a relative increase in slaughter. Much of the increase has been taken by small firms. Concentration of federally inspected (FI) and total commercial slaughter in the hands of the largest firms decreased sharply between 1950 and 1963 (table 3).

Along with increase in the number of FI slaughter plants has come an increase in specialization in the slaughter of a single species. Between 1950 and 1962, the

---

3/ The current decline in calf slaughter is largely due to the cyclical expansion of cattle feeding. Hence, at present more calves are being fed and marketed as cattle rather than being sold for slaughter as calves.

4/ Federal inspection is mandatory for all slaughter destined for interstate shipment. Thus, the proportion of slaughter under Federal inspection indicates the amount of meat available for shipment to interstate markets and, indirectly, the extent to which the market for meat is national in character.

Table 2.--Regional distribution of federally-inspected livestock slaughter, by species, 1950 and 1962

Year and region	Cattle: Percentage of total FI slaughter	Cattle: FI plants	Calves: Percentage of total FI slaughter	Calves: FI plants	Sheep: Percentage of total FI slaughter	Sheep: FI plants	Hogs: Percentage of total FI slaughter	Hogs: FI plants
1950	Percent	Number	Percent	Number	Percent	Number	Percent	Number
New England.......	1.3	16	2.7	16	2.3	13	1.3	11
Northeast.........	6.7	56	13.4	52	16.9	45	8.0	39
South Atlantic....	2.0	23	4.8	18	.01	7	3.5	23
Southeast.........	3.1	20	6.9	19	1.5	10	3.5	18
East North Central	23.3	82	31.7	69	12.1	43	26.1	54
West North Central	40.2	80	22.8	59	39.6	39	48.4	58
South Central.....	6.0	28	7.4	25	5.0	14	3.0	22
Mountain..........	4.8	28	.9	23	6.9	22	1.9	22
West Coast........	12.6	79	9.4	78	15.7	65	4.3	48
1962								
New England.......	.8	13	4.2	12	.02	8	.9	3
Northeast.........	6.7	65	28.2	50	13.5	39	7.6	34
South Atlantic....	3.2	28	9.6	20	.03	8	5.7	23
Southeast.........	4.2	27	5.3	18	1.9	9	5.8	24
East North Central	15.2	86	26.8	51	8.6	33	23.4	48
West North Central	44.1	108	14.7	24	35.3	25	48.6	60
South Central.....	5.9	41	6.2	26	12.8	15	2.6	19
Mountain..........	7.2	43	.3	26	12.7	28	1.7	26
West Coast........	12.7	80	4.7	56	15.2	40	3.7	25

Table 3.--Share of federally-inspected (FI) slaughter by four largest firms, United States, 1950 and 1964

Year	Cattle	Calves	Sheep	Hogs
	Percent	Percent	Percent	Percent
1950.................	51	58	70	48
1964.................	28	44	62	37

number of FI plants slaughtering a single species increased from 73 to 193, while the number slaughtering 2 species increased from 81 to 154. This was a relatively greater increase than the total growth in plant numbers. At the same time, the number of FI plants slaughtering all 4 livestock species decreased by more than one-half, from 175 to 84.

Another aspect of specialization is the extent to which plants slaughter but do not process meat. In 1961, 9 percent of the FI slaughter plants did no meat processing, and 50 percent of them processed to a very limited extent (an average of 14 percent of their slaughter output). There is also high specialization among FI meat processing plants--65 percent of them did no slaughtering. The greatest slaughter-plant specialization is in the livestock feeding areas where new plants have been built, and the greatest processing-plant specialization is in the heavily urbanized areas.

Accompanying increased specialization has been larger average plant size, as measured by slaughter of a single species. Modal plant size (size category containing largest number of plants) for FI cattle slaughter grew from 17,000 head per year in 1950 to 37,000 head per year in 1962. Modal size of FI hog slaughter plants increased to over 250,000 head per year. At the same time, modal size of FI calf and sheep slaughter plants decreased greatly.

Currently, meatpackers are integrated into livestock production to a very limited extent. In 1964, all packers fed 3.4 percent of commercial cattle slaughter, 1.0 percent of calf slaughter, less than 0.05 percent of hog slaughter, and 5.9 percent of sheep slaughter. Most of the feeding was done by smaller meatpacking firms.

Meat Wholesaling

In the last hundred years, meat distribution has undergone almost continuous revolution. At the beginning of the period, butchers distributed fresh meat from livestock slaughtered locally, often within the butcher shop. By 1960, most livestock was converted to meat in the prime livestock feeding areas and distributed across the Nation. The large meatpacker today shares his position of market superiority with the large retailer and retail groups.

Early in their growth, the large meatpackers developed a system of branch houses to compete with local slaughterers and wholesalers in eastern cities. From this beginning, meatpackers integrated into wholesale meat distribution until, in 1920, they owned more than 1,200 branch houses and nearly 1,500 car routes. Through ✓ their own wholesale facilities they probably handled about two-thirds of the fresh meat that moved in wholesale channels. Independent wholesalers handled about one-sixth of the total volume of fresh meat.

Both the branch house and the car route were packer-owner and controlled wholesale outlets. Many other food products in addition to meats were sold through these outlets. Packers operated in sharp competition with local wholesalers.

In the consent decrees of 1920, the five packers who owned most of these meat wholesaling facilities agreed to refrain from handling most nonmeat products in their wholesale outlets.

The late twenties saw the beginning of a number of economic trends that have led to pronounced changes in the packer-wholesale distribution system as it once flourished from coast to coast. Car routes and truck routes became widespread as branch houses were closed or reduced in importance because of their high maintenance cost. Finally, retailers were able to preempt most wholesaling from packers, just as packers had preempted it from local wholesalers 50 years before the rise of the independent meatpackers (who, in competition with the established national packers, aided retailers in their efforts to integrate into meat wholesaling). In turn, this development was fostered by changes in transportation and developments and shifts in the structure and location of meatpacking.

Retail chains (voluntary and corporate) grew rapidly during the 1920's. The 5 large chains, which owned about 6,000 stores in 1920, had increased their number to nearly 30,000 by 1929. As these chains established their own warehouses, in effect they duplicated the packers' wholesale facilities. The chains insisted that packers ship directly to chain-owned warehouses. Furthermore, the chains insisted on price discounts commensurate with the lower cost of making direct shipment. As the volume of meat moving through the branch houses declined, cost per unit increased. By 1929, the number of branch houses had declined by several hundred from the post-World War I peak. But the major shift in the pattern of meat wholesaling came after World War II. During this period, the chains began to place a larger emphasis on meat merchandising, and soon had a rapidly growing share of retail meat sales.

Despite the changing overall pattern of wholesaling, the role of independent meat wholesalers has been overshadowed, first by meatpackers and later by retailers. But even though chains and packers handle the bulk of the standard product in wholesale meat, they leave a substantial share of heterogenous products to be supplied by wholesalers. In 1929, there were 2,225 independent meat wholesalers in the United States. By 1958, there were 4,459. They handled about 18 percent of wholesale meat sales in 1929, and 23 percent in 1958. These wholesalers play a useful role in terms of transferring meat supplies within the market and bearing risk in particular supply and demand situations. Often, they are small and highly specialized. They may function as brokers for a particular type or size of carcass or meat product, or they may perform some special type of processing or carcass-breaking that is tailored to the needs of a particular group of customers. Usually, they are able to survive and to make a profit because of their highly developed trading acumen and knowledge of their markets.

Meat Retailing

The retailer usually buys a combination of carcasses and primal cuts of fresh meats and a selection of smoked, cured, and fresh meat products. Meat products in all forms make up about one-fourth of total food sales; of this, about half is beef.

Progress in meat retailing has been significant. Because meat quality is variable, difficult to identify and describe, and important to consumer satisfaction, it was at one time nearly axiomatic in the industry that mass meat merchandising was an impossibility. This concept persisted well into this century and is still occasionally encountered. It has, however, been almost completely replaced by the concept of specification buying. Transactions may be made between buyers and sellers who do not know each other, but who are willing to rely on meat quality specifications.

Because meat quality varies and is difficult to identify, meat seems to fail to meet one of the most critical criteria of products useful to retailers for promotion. In fact, however, the importance of meat in the family budget has made meat the leading promotional item. Merchandising techniques and mass handling efficiencies were keys in the development of present-day supermarkets.

Development

When the meatpackers began to grow, they increasingly integrated into meat processing. Butcher shops became primarily retail meat stores which bought from packers, wholesalers, and the packer branch houses, and meat retailing was largely confined to them.

Retail grocers moved into the retail meat business, for the most part, after 1940. And as supermarkets increased in number they became the primary outlet for retail meat sales. In the 1940's, self-service meat departments in supermarkets became important. In 1944, only 10 self-service meat departments in retail grocery stores were reported in the United States. By mid-1948, there were 178 self-service

Supermarkets have become the primary outlet for retail meat sales.

meat departments in grocery stores. At this point, the number began to grow tremendously--to 7,800 in 1952, to 11,500 in 1954, to 17,350 in 1956, to 20,000 in 1959, to 24,100 in 1960, and to an estimated number in excess of 26,000 in 1964.

Today retailers generally buy wholesale carcasses and primal cuts, and divide them into various retail cuts at the store. Generally, retailers do not extensively process meat. Most processed meat products are purchased either from meatpackers or from specialty meat processors.

Current Industry Structure

In 1960, over one-half of retail meat sales were by the 24,100 self-service meat departments in supermarkets and superettes. The other retail sales were largely by salesmen-service meat departments in supermarkets, corner grocery stores, and butcher shops. Since 1960, the proportion of meat sales in supermarkets likely has been growing.

There has been no apparent trend toward vertical integration of chainstores into meatpacking. In 1964, five food chains operated packing plants. These plants accounted for about 2.6 percent of cattle slaughter, 2.8 percent of calf slaughter, 0.3 percent of hog slaughter, and 3.5 percent of sheep slaughter. However, there has been evidence of willingness of chains to enter meatpacking when meat supplies are uncertain or when profit rates of packers are high in relation to those of retailers.

There is considerable evidence that food retailing is highly competitive. Prices are advertised on many articles so customers can make comparisons. Stores are bigger and fancier, with an ever increasing list of devices to please customers. Futher, profit levels of retailers are lower than those of many other industries.

On the other hand, retailers know their competitors, both in local retail markets and in national wholesale markets where they buy their food supplies. They know what they can and cannot do if they are to avoid retaliation from these competitors. They use market information to develop patterns of merchandising and buying that will draw customers but not invite retaliation.

✓ Within these limits, large retail firms show significant indications of market power. They have become large and important customers to each of their meat suppliers. They have taken over most of the wholesaling function from meatpackers, and have largely prevented customer reliance on packer-branded meat (with the exception of a few special arrangements) at either wholesale or retail. Many retailers place their own house brand on meat--even on federally graded or packer-branded meats. They are formidable negotiators and appear able to pit supplier against supplier, and to buy needed meat supplies at prices often lower than smaller retailers pay. Furthermore, they have opportunities to design pricing and promotion policies so that products with increasing or inelastic demands carry more overhead, and products with elastic demands, relatively less. By this pricing method, net profit can be increased as indicated by recent increases in meat price spreads. Retailers' share of the consumer's meat dollar increased about 10 cents in the last 16 years (table 4).

Price Performance

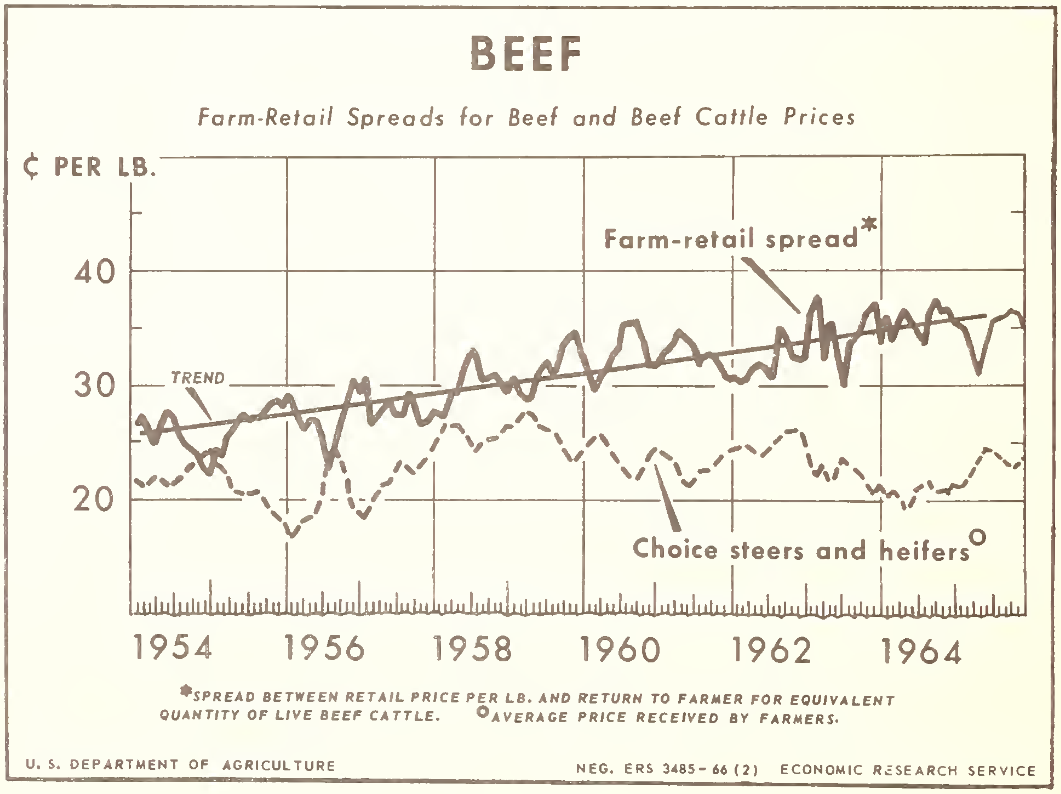
Major evidence on retailers' pricing policies may be obtained by observing price performance at the various market levels and the resulting patterns of price spreads, particularly for beef. 5/ The period since World War II has been one of the most dynamic in the history of the cattle industry, because of the increasing ability and willingness of U.S. consumers to buy beef. Cattle producers have marketed younger, higher quality, more uniform animals, and have grain fed an increasing proportion of the cattle slaughtered. Consumers with increasing incomes continue to demand more beef to barbecue, grill, and roast. Per capita consumption of beef in 1964 was an alltime high of 100 pounds, up more than 58 percent from the 63 pounds consumed in 1950. In 1965, per capita consumption fell to 99 pounds. Consumer demand for beef has increased sufficiently to allow increased consumption at relatively stable retail prices during most years. In 1958-62, for example, per capita consumption increased from 80.5 to 88.8 pounds. During the same period, the average retail price for all cuts of Choice grade beef remained about 81 cents per pound. Not until beef supplies per capita increased sharply in 1963 (about 7 percent) did retailers have to lower prices in order to move all the beef produced.

The spread between cattle and beef prices has two kinds of movement: A persistent upward trend and short-term month-to-month changes. A graph of the movement shows a jagged line slanting upward at the rate of slightly less than a penny a year between 1954 and 1965, with variations around this trend of as much as 10 cents in a 6-month period. It is important to separate these two movements to evaluate price performance (fig. 1).

5/ The price spread--the difference between the price per pound the consumer pays and the price the farmer receives for an equivalent quantity of live animal--is a return to marketing agencies for their services and includes all charges for distributing and processing services.

Table 4.--Distribution of consumer's meat dollar, 1949-64

Year	Farmer's share	Farm-wholesale spread		Wholesale-retail spread	
	Cents	Cents	Percent	Cents	Percent
1949....	63.6	14.4	39.5	22.0	60.5
1950....	64.6	12.7	35.8	22.7	64.2
1951....	66.3	11.9	35.4	21.8	64.6
1952....	61.7	15.5	40.4	22.8	59.6
1953....	58.8	16.9	41.0	24.3	59.0
1954....	58.6	16.7	40.4	24.7	59.6
1955....	52.8	20.1	42.6	27.1	57.4
1956....	51.4	20.7	42.6	27.9	57.4
1957....	53.2	19.4	41.4	27.4	58.6
1958....	56.6	17.2	39.6	26.2	60.4
1959....	52.6	18.2	38.5	29.2	61.5
1960....	52.2	18.9	39.5	28.9	60.5
1961....	51.9	17.3	36.0	30.8	64.0
1962....	53.3	17.8	38.2	28.9	61.8
1963....	50.0	17.7	35.5	32.3	64.5
1964....	48.0	20.1	38.7	31.9	61.3



*SPREAD BETWEEN RETAIL PRICE PER LB. AND RETURN TO FARMER FOR EQUIVALENT QUANTITY OF LIVE BEEF CATTLE. °AVERAGE PRICE RECEIVED BY FARMERS.

U. S. DEPARTMENT OF AGRICULTURE NEG. ERS 3485-66 (2) ECONOMIC RESEARCH SERVICE

Figure 1

Short-term changes in the spread are closely associated with short-term changes in cattle prices. The 1-month lag between changes in cattle and beef prices causes the price spread to be a comparison between a cattle price that is adjusting to the supply change and a beef price that has not yet reacted to this change. Cattle prices change first, because supply increases are first felt at the live market level. By the time the impact of a given supply change is felt at retail, cattle prices may be responding to a later supply change. Thus, in the very short run, changes in spreads are dominated by changes in cattle prices. Monthly price spreads tend to widen as cattle prices **fall,** and narrow as cattle prices rise.

The lag between cattle and beef price changes and its consequent impact on the spread are observed both when prices rise and when they fall. Its cause appears to be mainly the length of time required for a change in supply to move from live level to the retail level. Other factors may be important, including the preference retailers have shown for stable regular prices and their dependence on special sales to move increases in supply that may be of short duration.

The shortrun lag in retail price responses, combined with changes in cattle prices, appears to explain a large proportion of the month-to-month changes in the price spread, but not the longrun trend. As the price spread moved up and down in 1954-65, it usually did not go quite as far down as it had gone up. The result was an upward trend not explained by changes in cattle prices, which had a definite long-term pattern of nearly equal up-and-down movements.

Cattle prices begin to increase about a month before retail prices and retail prices continue to rise about a month after this trend in cattle prices has ended. In periods of falling prices, cattle prices go down for about a month before beef prices follow. Furthermore, beef prices continue this trend for about a month, on the average, after cattle prices have stopped falling. On the whole, retailers have lagged about the same in following cattle price rises as they have in following cattle price declines (table 5).

In free markets, large changes in supply cause changes in price at the live, wholesale, and retail levels, since the demand for meats is fairly constant in the very short run. Although this basic assumption means that prices should change in response to short-run supply changes, it does not indicate how much of a price change to expect at each level when changes occur in cattle and beef production, and it does not say how soon these changes should occur.

Data for recent supply changes show the typical pattern of retail price adjustments lagging behind changes in cattle prices. This pattern appears to result from pricing policies of retailers. The implications of the long-term increases in the spread between cattle and beef prices are much less certain. Operating expenses for both packers and retailers appear to have increased more rapidly than productivity; it cost more to handle a pound of beef in 1965 than in 1955. In 1965, more beef cuts were prepackaged than in 1955. Retailers now seem to trim beef more closely and to sell more of it in boneless cuts than in 1955. These changes affect product quality as well as cost. Both the packer and retailer now pay considerably more for their labor than they did in 1955--probably 40 to 50 percent more per hour. However, they probably use 10 to 15 percent less labor, and correspondingly more equipment, which also costs more now than it did in 1955. Packers and retailers operate more efficiently today than they did 10 years ago. Thus, better location, organization, and equipment of packing plants and retail stores has offset at least part of the increased input costs.

Changes in retail price of Choice-grade beef per pound and in value of equivalent live product, United States, 1954-65

Beef		Live product equivalent		Lag in retail price at beginning and end of period	
Period	Price change 1/	Period	Price change 2/	Beginning	End
Periods of increasing prices					
	Cents		Cents	Months	Months
Apr. 1954 - Jan. 1955	2.8	Mar. 1954 - Jan. 1955	5.3	1	0
Mar. 1956 - Oct. 1956	12.1	Feb. 1956 - Sept. 1956	13.7	1	1
Mar. 1957 - Sept. 1957	8.2	Feb. 1957 - Aug. 1957	9.6	1	1
Nov. 1957 - June 1958	10.6	Oct. 1957 - Apr. 1958	11.8	1	2
Sept. 1958 - May 1959	3.3	Aug. 1958 - Apr. 1959	7.7	1	1
Feb. 1960 - Apr. 1960	1.6	Dec. 1959 - Apr. 1960	3.9	2	0
Oct. 1960 - Jan. 1961	2.5	Oct. 1960 - Jan. 1961	4.7	0	0
July 1961 - Apr. 1962	4.8	June 1961 - Apr. 1962	8.3	1	0
June 1962 - Dec. 1962	6.0	June 1962 - Nov. 1962	7.5	0	1
June 1963 - Aug. 1963	3.2	May 1963 - July 1963	4.6	1	1
June 1964 - Sept. 1964	5.3	May 1964 - Sept. 1964	9.2	1	0
Feb. 1965 - July 1965	6.7	Feb. 1965 - June 1965	8.6	0	1
Average	5.6		7.9	0.8	0.7
Periods of decreasing prices					
Jan. 1955 - Mar. 1956	-9.3	Jan. 1955 - Feb. 1956	-13.9	0	1
Oct. 1956 - Mar. 1957	-7.2	Sept. 1956 - Feb. 1957	-11.2	1	1
Sept. 1957 - Nov. 1957	-1.5	Aug. 1957 - Oct. 1957	-2.6	1	1
June 1958 - Sept. 1958	-2.6	Apr. 1958 - Aug. 1958	-7.0	2	1
May 1959 - Feb. 1960	-2.7	Apr. 1959 - Dec. 1959	-7.9	1	2
Apr. 1960 - Oct. 1960	-3.0	Apr. 1960 - Oct. 1960	-6.4	0	0
Jan. 1961 - July 1961	-5.8	Jan. 1961 - June 1961	-8.5	0	1
Apr. 1962 - June 1962	-1.3	Apr. 1962 - June 1962	-2.9	0	0
Dec. 1962 - June 1963	-7.7	Nov. 1962 - May 1963	-13.7	1	1
Aug. 1963 - June 1964	-6.0	July 1963 - May 1964	-9.6	1	1
Sept. 1964 - Feb. 1965	-2.2	Sept. 1964 - Feb. 1965	-3.6	0	0
Average	-4.5		-7.9	0.6	0.8

1/ Changes in weighted average retail price calculated from monthly prices of individual cuts published by the Bureau of Labor Statistics.

2/ Changes in value of equivalent quantity of Choice steers, calculated from average prices of steers (900-1,100 lb.) at 10 leading public stockyards. Because of increased boning and trimming of retail cuts, the equivalent quantity increased from 2.12 lb. in 1954 to 2.25 lb. in 1963 and later years.

The opposite impacts of increasing efficiency and increasing costs leave unanswered the question of how increased expenses for packing plants and retail stores compare with increased returns to packers and retailers for handling a pound of beef. The farm-retail spread for Choice beef has been increasing much more rapidly than the consumer price index. Since 1959, the spread for beef has been increasing much faster than spreads for other meats and the average spread for all foods.

Despite increases in the marketing share of retail price, overall profits reported by packers and retailers have not been large in relation to those of other industries in recent years. Profits have changed considerably from year to year, but data for the last 15 years show no significant trend.

Demand for beef has increased in recent years. However, if retailers' and meatpackers' price spreads widen, demand at the farm level may be reduced. After World War II, the demand for cattle apparently increased less than the retail demand for beef. The major part of the difference in rates of increase was due to the upward trend in the farm-retail price spread.

Although price spread data are among the best evidence available, they are not good evidence of either market power or marketing efficiency. First, the data suffer from aggregation. For example, the prices of individual cuts of beef are used to derive a weighted estimate of the average carcass price of beef. In fact, this estimate relates more directly to the average price of beef cuts because the cuts are marketed individually--as specials, in some cases. The volume and value of an individual cut in proportion to all cuts moving through retail outlet vary from the proportion of carcass volume and value made up by the cut. To the extent that these variations are important, price estimates are incomplete.

Second, price spreads, even if perfectly measured, give little evidence of the causes of changes in the spreads. The estimating procedures make the size of the spread subject to question. Thus, spreads are meaningful only when compared over time. But products change over time as the demands for services change and merchandising practices change. Particularly, current published spread data are biased because (1) changes in specialing practices make estimates of average prices less meaningful now than 10 or 15 years ago, and (2) the services added by the retailer have changed the end product the consumer buys.

The magnitude of the bias cannot be measured precisely. However, average beef price estimates assuming sharply increased movement at special prices and lower yields (reflecting higher trim and more boning) indicate that adjustments great enough to negate the persistent upward trend are unreasonably large. This judgment is based on observations of retailers' practices.

Assuming, then, that retailers' spreads are increasing in real terms more rapidly than their costs, while packers' spreads increase at about the same rate as costs, what can be said of the developing structure of the meat industry?

Possible Impact of Retailers Pricing Policies on Other Marketing Levels

Retailers shift their overhead costs among meats and between meats and other commodities, directly affecting the farm demand for livestock. As overhead increases and price spreads widen, demand is decreased--other things remaining unchanged.

As margins narrow, demand increases. As retail demand increases, retailers will probably continue to shift more of their overhead to beef and thus appropriate much of the demand increases for themselves. As a result, the demand for cattle will increase more slowly than the demand for meat. At the same time, overhead will probably shift from pork and thus the demand for hogs (especially lean, high-yielding hogs) will probably increase faster than the demand for pork. However, the demand for byproducts, such as lard, may continue to fall and tend to offset any gains to hog farmers resulting from policy shifts at retail.

Changes in the share of the overhead load assigned to commodities are not evidence that retailers are able to ignore competition in planning their reactions to changes in supply and demand. They do mean that retailers are able to adjust their pricing policies as changes occur in the relative ability of commodities to contribute to overhead.

In practice, retailers "special" only a limited number of items each week. When supplies are large, this number increases. In any given week, however, many cuts are offered only at regular prices--even when supplies are particularly large. Generally, beef cuts are not specialed as frequently when pork or poultry specials are offered. Yet at times, supplies of beef, pork, and poultry increase together. In such a period, retailers apparently try to hold regular meat prices steady during the first days of the week and offer more weekend specials at lower prices.

When increased supplies of several meats move into wholesale markets at lower prices, special retail sales may not move these quantities easily. In such cases, unchanged regular prices may put additional downward pressure on wholesale and live prices. However, the same rigidity very likely puts upward pressures on rising prices during opposite supply circumstances. These pressures depend on a combination of changes in supply of two or more meats or poultry--unusual circumstances that probably would neither happen often nor persist for very long. The rigidity leading to such pressures would appear to grow out of the rules retailers use to price their products and the uncertainity they feel about the full extent of supply changes.

The pressures resulting from this rigidity, and simultaneous changes in the supplies of several commodities, each competing for the retailers' special merchandising efforts, may appear at the farm level as a temporary decrease or increase in demand. Under such circumstances the forces which cause retail prices to tend to underadjust to certain supply changes may be responsible, in turn, for part of the overadjustment in live prices.

Although there is no significant evidence that retailers are able to ignore competition in planning their reaction to changes in supplies, it is likely that the tendency of live prices to overadjust would be lessened if retail meat prices were more sensitive to wholesale and live prices. To the extent that increases in retail price sensitivity would reduce this tendency, producers would be benefited. When live prices overadjust, production and feeding are overstimulated on rising markets and too sharply cut back on falling markets. The more accurate the economic indicators available to producers, the better they are able to adjust to changing economic situations.

Supporting Services

The major marketing institutions of the livestock-meat economy have been described above. In connection with the operation of these marketing institutions there are a number of complementary institutions. These are public, private, and combinations of public and private. Thus, transportation is offered the livestock-meat industry by a number of types of rail and trucking firms, most of which are regulated by the Federal Government. Transportation is steadily improving as new and better roads allow faster truck service, as piggyback services become faster and cheaper, and as the slowly changing rate structures recognize the competitive relationships among trucks, railraods, and barges in moving grain, livestock, and meat.

Credit institutions are also important in the livestock-meat economy. The two major trends--increasing size of firms engaged in livestock production, feeding, and retailing; and decreasing importance of the largest meatpacking firms--depend extensively on credit. Livestock feeders need extensive credit, especially as the size of operations expands to take advantage of economies of size. The small, efficient meatpackers, who are so competitive today, depend on the availability of credit to finance their entry into the industry. In most cases, this credit--from banks and stock issues--is private. In a few instances, firms are aided by Federal loans.

Market news is a critical element of the livestock-meat economy. The supply of livestock and meat is scattered across the Nation at each point in time, and the demand consists of a large number of separated buyers. Both buyers and sellers depend on market news for fast, accurate evaluations of supply and demand. In the Midwest, a private firm collects meat prices hourly and relays this information to customers in all parts of the United States. Other firms in other areas have more limited operations, reporting both live animal and meat prices. The U.S. Department of Agriculture reports livestock markets and wholesale meat prices from a limited number of wholesale centers. The Department also cooperates with State Departments of Agriculture in broad programs of price reporting.

Basic to interpreting price information is reliable evaluation of meat and livestock quality. Although several meatpackers have developed their own brands in attempts to differentiate their products in the minds of their customers from those of competitors, the USDA grading service is the principal source of information about livestock and meat quality. Both live and carcass grades are available for most livestock. A few livestock, mostly feeder cattle, are graded alive, but the main use of Federal grades is on beef and lamb carcass. Pork grades are available but rarely used. Currently it is estimated that between two-thirds and three-fourths of the grain-fed beef is federally graded. Between two-fifths and one-half of the lamb is federally graded.

Federal grades for beef and lamb are widely used and provide a frame of reference for pricing livestock, carcasses, and even meat at retail. Retailers often advertise Federal grades, and use them in describing their specifications to potential suppliers. Federal grades are often used in price comparisons, even when specifications other than Federal grades are used in meat purchases.

A fundamental institution in U.S. meat marketing is the Federal meat inspection service. Federal law requires that Federal inspectors certify the health of slaughter livestock and the cleanliness of slaughter facilities for all meat moving in interstate commerce. This service has been offered for nearly 60 years and has been the standard for State and municipal inspection requirements in many areas. More than three-fourths of U.S. meat production is federally inspected, and much of the remainder is slaughtered in plants inspected by State or local governments.

The Packers and Stockyards Division of the Consumer and Marketing Service is charged with two types of duties. One of these is to maintain and insure competition among firms in the competitive sector of the meat marketing industries. The Division examines virtually all livestock markets, guarding against inaccurate weights, non-payments for purchases, and other forms of unfair trade practices. Further, it has the duty of carrying out public antitrust policy for the livestock-meat industries. By certain legal processes it can enforce cease-and-desist orders and recommend penalties for unfair trade practices. The other major duty of the Packers and Stockyards Division is to regulate rates and practices in the sector of livestock marketing not amendable to competition among firms. Thus, for example, it examines rates of stockyards and commission firms which operate as public utilities in the market.

LIVESTOCK PRODUCTION AND CONSUMPTION

The production of cattle, calves, hogs, sheep, and lambs generates the largest segment of farm income. About one-third of farm income came from the sale of livestock in 1964--nearly $11 billion. Beef, the most valuable agricultural product, returned more than $7.7 of the $11 billion. Dairy production, the next most valuable agricultural enterprise, returned little more than half the total value of beef production. Hog production was third. Together, cattle and hog production provide most of the income from livestock marketing, more than $10.7 of $11 billion. Sheep and lamb production accounted for the remaining $0.3 billion.

Increases in livestock production in recent decades have come in both breeding herds and feeder livestock. In 1930, the United States produced approximately 30.5 billion pounds of livestock for slaughter. By 1964, production was 55.5 billion pounds. Most of this increase came from cattle and calf production, which increased from 13.3 to 33.8 billion pounds. Hog production increased by over one-third from 15.2 to 20.3 billion pounds. In 1965, production dropped under 54 billion pounds, due chiefly to a marked decline in pigs raised.

Cattle, which accounted for about 13 percent of cash receipts from farm marketings in 1930, accounted for more than 20 percent in 1964. Hogs contributed 12.5 percent in 1930, and less than 2 percent in 1964. Sheep provided 1.8 percent in 1930, and less than 2 percent in 1964.

Not only is a long growing and feeding period required before livestock can be converted into high-quality meat, but the gestation period for livestock is long. Even so, production clearly responds to price levels, and it responds with increasing alacrity. Although the number of head of slaughter livestock available for feeding depends on the size of the breeding herd--and therefore is slow to change--the manner and extent of feeding can alter meat production significantly in a half-year's time. The large number of geographically dispersed farms producing livestock and the long period involved in production result in problems in coordination of production responses. The industry, therefore, is characterized by overadjustment to price changes. In cattle and hog production, this overadjustment has led to production-price cycles.

Although production-price cycles have been a prominent economic feature of the livestock industry, other production-price patterns have deeper economic significance. The industry has encountered considerable economic stress intrepreting and accommodating the very sharp changes in demand in recent years. These changes and some of their impacts are discussed below.

Developments in the Demand for Meat

The relationship between livestock production and meat consumption is very close. ✓ Nearly all livestock produced in this country are consumed here, for exports are small and consist almost entirely of byproducts (table 6). On the other hand, meat consumption is nearly the reflection of livestock production because in most years only a small proportion of domestic consumption is imported, and nearly all of this is required to fill a demand not met by domestic meat products. As a result, short-run changes in domestic meat consumption reflect changes in production rather than changes in demand. With today's technology and consumer preferences, fresh meat is not stored long. Since imports and exports tend to be small, current consumption is almost completely determined by current production.

As the period under consideration is lengthened, the short-term relationship--where supply is the dominant influence determining price--is attenuated. Because of the biological characteristics of livestock production and the price uncertainty, long periods are required for full production response to price changes: more than 1 year for hogs, 3 to 8 years for cattle.

Pricing provides the necessary communications link between meat demand and livestock supply. Production adjusts constantly but belatedly to either low or high prices. In turn, increases or decreases in production cause rapid increases or decreases in prices. Producers constantly evaluate the relative profitability of cattle, hog, and sheep production, and tend to allocate their resources for future production according to the production combination most profitable in the past. As a result, consumer preferences, which influence price responses to supply changes in the short run, influence production responses in the long run. By influencing short-run responses, the meat consumer has a most important voice in livestock production changes.

Furthermore, things that affect the well-being of consumers generally have important impacts on demand for meat. Two very important changes of this nature have been changes in consumers' income and shifting attitudes toward high-energy foods in general and fat in particular.

The spectacular increases in real per capita disposable income were an outstanding characteristic of the U.S. economy in recent years. In 1930-40, income was fairly stable. It started upward during World War II and has increased rapidly during the postwar period. In 1964 dollars, per capita personal disposable income was $1,040 in 1930, $1,628 in 1950, and $2,099 in 1964.

For the livestock-meat industry, this trend is highly significant. Consumers prefer meat to many other foods and they eat more meat as they become better able to afford it. At the same time, they can sharpen their preferences among qualities and types of meat.

Not only has the American meat consumer become more prosperous, he has changed significantly in his work, his education, and his awareness of what is good for him. He has become more urban and more sedentary, and requires fewer calories. He spends more time reading and observing so that he is more aware of health and personal appearance.

Forty years ago the best livestock and meat were considered outstanding because they were fat. There was little question among consumers or producers that the best and most flavorful product depended on fat for much of its quality. Lard was a widely used and valuable product, and fat meat was highly regarded as an energy food.

Today's consumers have a totally different outlook. Far more likely to be overweight than undernourished, they have developed a near aversion to animal fat. Pork's

Table 6.--Supply and distribution of meat, United States, selected years, 1930-65

Type of meat, year	Supply				Distribution					
	Production	Beginning stocks	Imports		Exports		Ending stocks	Military	Civilian Consumption	
			Total	Percentage of supply	Total	Percentage of supply			Total	Per capita
	Mil. lb.	Mil. lb.	Mil. lb.	Percent	Mil. lb.	Percent	Mil. lb.	Mil. lb.	Mil. lb.	Lb.
Beef:										
1930	5,917	104	134	2.2	59	1.0	75	---	6,021	48.9
1940	7,175	77	168	2.3	56	0.8	107	---	7,257	54.9
1950	9,534	121	338	3.4	21	0.2	147	296	9,529	63.4
1958	13,330	134	896	6.2	47	0.3	174	353	13,786	80.5
1963	16,450	189	1,651	9.0	52	0.3	281	365	17,592	94.2
1964	18,448	281	1,068	5.9	91	0.5	315	413	18,898	100.4
1965	18,646	315	931	4.9	91	0.5	240	562	18,999	99.0
Veal:										
1930	792	---	2	0.3	--	---	---	---	794	5.6
1940	981	---	---	---	--	---	---	---	981	6.7
1950	1,230	16	10	0.8	2	0.2	14	34	1,206	7.8
1958	1,186	13	13	1.1	2	0.2	16	44	1,150	6.7
1963	928	12	26	2.7	2	0.2	13	39	912	4.9
1964	1,011	13	17	1.6	5	0.5	13	35	988	5.2
1965	1,019	13	18	1.7	5	0.5	11	45	989	5.2
Lamb and mutton:										
1930	825	5	1	0.1	2	0.2	5	---	824	6.7
1940	876	5	---	---	3	0.3	5	---	873	6.6
1950	597	14	3	0.5	2	0.3	10	6	596	4.0
1958	688	5	41	5.6	2	0.3	9	4	719	4.2
1963	770	15	145	15.6	1	0.1	19	3	907	4.9
1964	715	19	79	9.7	2	0.2	13	3	795	4.2
1965	648	13	73	11.0	3	0.5	10	2	719	3.7
Pork:										
1930	8,482	621	3	1/	339	3.7	521	---	8,246	67.0
1940	10,044	469	6	0.1	162	1.5	656	---	9,701	73.5
1950	10,714	474	33	0.3	110	1.0	499	222	10,390	69.2
1958	10,454	194	193	1.8	118	1.1	206	192	10,325	60.2
1963	12,447	230	225	1.7	208	1.6	277	237	12,180	65.3
1964	12,531	277	268	1.8	215	1.7	284	196	12,311	65.0
1965	11,175	284	325	2.8	117	1.0	148	242	11,273	58.7
Total:										
1930	16,061	730	140	0.8	400	2.4	601	---	15,885	129.0
1940	19,076	551	174	0.9	221	1.1	768	---	18,812	142.4
1950	22,075	625	384	1.7	135	0.6	670	558	21,721	144.6
1958	25,658	346	1,143	4.2	169	0.6	405	593	25,980	151.8
1963	30,595	446	2,047	6.2	263	0.8	590	644	31,591	169.3
1964	32,705	590	7,432	4.3	315	0.9	625	727	33,060	174.5
1965	31,488	625	1,347	4.2	218	0.7	1,502	851	31,980	166.6

1/ Less than 0.1 percent.

image as a high-calorie meat may have increased the demand for beef. The value of lard has decreased steadily since World War II. This postwar decline in the U.S. demand for fat and lard has been significant in reshaping livestock production.

The byproducts of livestock slaughter are valuable for many purposes and their value contributes significantly to the worth of livestock on the hoof. In general, however, there has been a downward trend in the value of byproducts relative to the value of meat (table 7). Byproducts such as hides, edible offal, glands (used for medical purposes), etc., still have well-defined markets, but the demand for these products has been undergoing striking changes, mostly due to the development of substitutes. For example, leather substitutes in the form of plastics, rubber products, and rapidly improving "artifical leather" have reduced the demand for leather and hides.

Table 7.--Value of livestock byproducts as a percentage of gross farm value, United States, selected years 1930-65 1/

Year	Cattle and calves	Hogs	Sheep and lambs
	Percent	Percent	Percent
1930	15.1	18.0	17.9
1940	13.8	15.1	23.4
1950	11.1	13.5	15.7
1958	8.6	12.6	12.0
1963	8.8	12.6	14.7
1964	9.0	13.0	15.2
1965	9.5	12.9	14.8

1/ Includes edible and inedible byproducts. Hides and pelts for cattle and lambs and lard for hogs make up important portions of byproducts values.

The decreasing value of byproducts is especially noticeable in cattle, for which byproducts contributed over 15 percent of the value in 1930 and about 9 percent in 1963. Byproducts contribute about 15 percent of the value of sheep and lamb, over 12 percent of the value of hogs, and over 9 percent of the value of cattle and calves.

Along with the shifts in the individual consumer's demand for meat, there has been an increase in demand because of increased population. The increase in consumer demand for meat resulting from population increases alone is estimated at about 1.5 percent per year in the early sixties, and the increase from all sources at about 3 to 4 percent a year.

Developments in Livestock Production

The major slaughter-livestock species continue to be cattle, sheep, and hogs. There is also a very small production of goats for slaughter. Total livestock production has increased, but most of the increase has been in cattle production. Hog production has increased at a slightly slower rate than population growth. Hence, production per capita has declined.

Trends in cattle and hog production are difficult to observe because of production-price cycles. The cattle cycle is about 10 years and the hog cycle is much shorter--about 4 years. Improved production practices and improved access to market information appear to have reduced both the length and the severity of production-price cycles since World War II, but they are still very much a part of the economic climate of the livestock industry. Care is required not to be misled by the cycle when evaluating trends in cattle and hog production.

Allowing for cyclical changes, substantial trends in cattle and hog production have been observed for many years. An increasing proportion of slaughter cattle are being grain fed. Moving cattle from ranges to feedlots at earlier ages has released range area for breeding herds and reduced the average age of the cattle herd as well as the average age of slaughter livestock.

Despite the fact that more slaughter cattle are moving through feedlots, the production goal appears to be a lighter weight carcass, better adapted to consumer preferences and chainstore specifications. Fewer cattle are fed to reach the very heavy weights. This is particularly true in newly important feeding areas--especially in Colorado, Arizona, and California.

Increased hog production has been largely the result of improved breeding practices, but better feeds, better management, and more investment in facilities have enabled higher farrowing rates and more litters per year. Average weight per pig marketed has increased slightly (about 7 pounds), but emphasis has been on lean pork production, and overfat hogs are frequently discounted in the market.

Regional Production

The growth in total livestock production was accompanied by unequal changes in production among regions and shifts in relative contributions of regions to total production (tables 8 and 9).

The largest portion of slaughter-cattle production continues to be in the West North Central States. These States, which comprise the extensive feeding areas of the western Corn Belt, produced nearly 40 percent of our slaughter cattle in 1930. Their share decreased to about 38 percent during 1940-64, although total production more than doubled. The South Central States--the second most important cattle producing region--tripled their production in 1930-64.

Range production of calves continues to be a major enterprise in these States, but construction of large-scale commercial feedlots has probably been the most important ingredient in their production growth. Increasing production in the West has occurred at about the same rate as in the South Central States, and it has taken place for many of the same reasons.

Large commercial feedlots have prospered in the Far West which has become nearly self-sufficient in beef production. Range production of cattle has been augmented by increasing range productivity, and by the displacement on the range of sheep and horses. Although cattle production in the East North Central States has doubled, its growth has been slower than the U.S. average.

The North Atlantic States--now the smallest cattle producing region--produce slaughter-cattle largely as a byproduct of dairy herds. Consequently, they have had only a slight increase since 1930 in feedlot production and very small growth in total cattle production. On the other hand, the South Atlantic Region--the smallest production region until 1950--has more than tripled production since 1930. This region has the most rapidly increasing cattle and calf production of all the regions.

Table 8.--Trends in meat production, by region, selected years, 1930-63

(1930 = 100)

Region	Cattle and calves				Sheep and lambs				Hogs			
	1940	1950	1958	1964	1940	1950	1958	1964	1940	1950	1958	1964
	Index	Index	Index	Index	Index	Index	Index	Index	Index	Index	Index	Index
North Atlantic........	108.3	139.3	133.0	130.4	62.5	32.5	47.3	46.5	127.4	116.3	94.3	79.5
East North Central....	137.5	159.0	187.3	205.2	94.4	53.9	73.6	57.2	143.9	163.2	164.5	176.7
West North Central....	105.7	137.9	175.9	245.0	142.1	94.5	139.4	113.1	88.1	114.2	110.9	120.0
South Atlantic........	124.7	186.5	297.4	319.7	66.8	52.2	59.8	44.9	131.7	159.8	1[illegible].4	156.4
South Central.........	124.9	185.1	233.7	297.4	156.3	117.7	109.0	81.9	150.7	167.6	123.[illegible]	120.4
Western...............	125.1	184.3	241.7	308.4	93.7	55.6	68.3	57.6	132.3	99.5	72.1	77.9
United States.........	118.4	159.7	201.8	255.5	106.9	68.0	84.3	68.6	112.3	133.2	126.4	133.7

Table 9.--Regional distribution of livestock production, by species, selected years, 1930-64

Species and year	N. Atlantic Region	E. N. Central Region	W. N. Central Region	S. Atlantic Region	S. Central Region	Western Region	United States
Sheep and lambs:	1,000 lb.	1,000 lb.	1,000 lb.	1,000 lb.	1,000 lb.	1,000 lb.	1,000 lb.
1930	47,059	250,708	322,558	75,290	217,770	1,051,952	1,965,337
1940	29,415	236,635	458,210	50,265	340,335	986,068	2,100,928
1950	15,278	135,200	304,746	39,313	256,377	584,806	1,335,720
1958	22,281	184,439	449,569	45,039	237,394	718,759	1,675,480
1964	21,899	143,434	364,759	33,789	178,409	606,175	1,348,465
Hogs:							
1930	295,553	3,733,465	8,386,010	825,670	1,401,800	533,230	15,175,728
1940	376,455	5,372,642	7,389,669	1,087,150	2,112,053	705,435	17,043,404
1950	343,633	6,094,388	9,576,590	1,319,344	2,349,175	530,602	20,213,732
1958	278,648	6,142,005	9,298,991	1,319,344	1,735,125	384,321	19,179,682
1964	235,037	6,596,010	10,067,359	1,291,199	1,687,118	415,136	20,291,859
Cattle and Calves:							
1930	757,368	2,073,891	5,222,268	538,270	2,538,935	2,132,316	13,263,048
1940	820,175	2,851,505	5,520,180	671,140	3,170,810	2,668,300	15,702,110
1950	1,054,975	3,297,285	7,199,178	1,003,705	4,700,680	3,929,425	21,185,248
1958	1,006,931	3,883,965	9,185,810	1,600,845	5,933,885	5,152,950	26,764,386
1964	987,620	4,254,685	12,792,910	1,720,945	7,551,290	6,576,310	33,883,760
Sheep and lambs:	Percent	Percent	Percent	Percent	Percent	Percent	Percent
1930	2.4	12.8	16.4	3.8	11.1	53.5	100.0
1940	1.4	11.3	21.8	2.4	16.2	46.9	100.0
1950	1.2	10.1	22.8	2.9	19.2	43.8	100.0
1958	1.4	11.1	27.1	2.7	14.3	43.4	100.0
1964	1.6	10.6	27.1	2.5	13.2	45.0	100.0
Hogs:							
1930	2.0	24.6	55.3	5.4	9.2	3.5	100.0
1940	2.2	31.5	43.4	6.4	12.4	4.1	100.0
1950	1.7	30.2	47.4	6.5	11.6	2.6	100.0
1958	1.5	32.0	48.5	7.0	9.0	2.0	100.0
1964	1.2	32.5	49.6	6.4	8.3	2.0	100.0
Cattle and lambs:							
1930	5.7	15.6	39.4	4.1	19.1	16.1	100.0
1940	5.2	18.2	35.1	4.3	20.2	17.0	100.0
1950	5.0	15.6	34.0	4.7	22.2	18.5	100.0
1958	3.8	14.5	34.3	6.0	22.2	19.2	100.0
1964	2.9	12.6	37.8	5.1	22.3	19.4	100.0

Sheep and lamb production continue to be concentrated in the West, chiefly on rangeland. However, 1964 production was less than two-thirds of 1930 production. This resulted from the greater market value of cattle and from difficulty in obtaining suitable sheepherders. Therefore, beef cows have tended to replace sheep on the western range.

The West North Central States increased sheep production slightly. Coupled with an aggregate decline in production, this resulted in an increasing share of total production in these States.

Sheep production in the North Central States, although consisting partly of farm flocks, is primarily feedlot finishing of lambs purchased from the western range.

After an early increase, sheep production in the South Central Region declined. But as the region's production decrease was relatively less than the decrease in the country as a whole, the region's share of total production has grown. The slower decrease in production is partly explained by the emphasis on livestock grazing accompanying a shift from intensive cropping to grass in these States. There is some range production of sheep in this region, complemented by feedlot finishing of lambs.

The North Atlantic Region produced less than half as many sheep in 1964 as in 1930. Dairying, the predominant livestock enterprise in the region, is more profitable and continues to replace sheep and lamb production.

Hog production, like production of other livestock species, is unevenly spread throughout the Nation. The West North Central Region's share has declined slightly since 1930, but remains at approximately half of the U.S. total. Between 1930 and 1964, production in the region increased by roughly one-fifth--less than the national increase of one-third. Production in the East North Central States increased by about 75 percent. Thus, the combined production of the North Central States exceeded 80 percent of total hog production in 1964. Production in these States reflects the traditional close association between corn and hogs in agricultural production. The South Central Region is the third largest production area. The South Atlantic Region has had an increase since 1930 in share of production. Total production and relative share of production in the West have both declined since 1930.

CURRENT PROBLEMS--FUTURE DEVELOPMENTS

If there is a single theme in the foregoing discussion of trends in the marketing of meat and livestock, it is that of change. The technology, location, and distribution of raw materials and production techniques of this diverse and dynamic industry have changed until they have only faint resemblance to those of 50 years ago.

Current Problems

Before World War I, both slaughter and feeder livestock in the United States were bought and sold almost exclusively at terminals, frequently owned or operated by large packers. Feeder livestock moved to the terminals that were physically located between the ranch and the feedlot. Slaughter stock moved through terminals that were most often located adjacent to packing plants. The exception, of course, was the livestock shipped long distances from Midwestern terminals to terminals or plants in the east or west coast areas.

The picture today is strikingly different. Most slaughter stock go directly from farmer to packer. Auctions handle a significant share of the remainder. The once dominant terminal market system handled less than one-fourth of the hogs, less than one-third of the sheep and less than two-fifths of the cattle purchased by packers in 1964. Many terminal markets have closed in recent years, and others are operating at part capacity. Some have fared better and continue to receive a substantial volume of livestock. A third group has changed the nature of their operations so that they more closely resemble auctions or other kinds of markets than the traditional terminal market.

It cannot be said that terminal livestock markets will soon disappear. It would be even less realistic to say that any general reversal of the trend of their declining importance is in view at this time. What is happening is that livestock selling is being completely reorganized.

A major proportion of the slaughter livestock sold in this country last year--perhaps more than 95 percent--were sold in about the same way that livestock were sold in Biblical times. The buyer and seller haggled over the quality and the yield of the livestock, finally came to an agreement, and a deal was made. That this system is obsolete, and that it will give away to something more efficient, is no longer a question. With today's narrow margins, it costs too much to transport livestock for buyers' assessment. Carcasses can be described, appraised, and priced more accurately than live animals. Prices based on this more accurate description can be more precisely communicated. Although growth of this method has been limited, the presence of a neutral inspector to monitor the process could effect a marked change in the marketing pattern. Meanwhile, new developments in livestock production continue to come slowly but persistently.

The basic force is the economic motivation to grow and feed livestock in the cheapest, most efficient manner. Thus, cow herds and flocks of sheep are raised on low-cost rangeland, and drylot feeding is done where feed concentrate is produced. The recent increases in cattle feeding in grain-deficient areas appear to contradict this rule, but the apparent explanation is that, while the cost of feed concentrate is the greatest expense in putting a pound of gain on livestock, it is not the only one. If sufficient reduction can be made in costs of handling, procurement, selling, financing, etc., areas where grain costs are relatively high can still compete. It appears that cattle feeders in the intermountain West are taking advantage of some of these possibilities for cost reduction.

Today, ranges carry significantly more cows per acre than they did 20 years ago. Better management, more fertilizer, and better grasses have upgraded some rangeland, and opened up other lands previously unfit for grazing. Former cotton areas of the South now are stocked with cow herds and produce feeder calves. Calves are moving into feedlots at earlier ages, releasing grazing acreage for breeding herds. Tractors have displaced horses and mules and released the grazing land they once required. Calf production per cow is up. But in spite of these changes, we are nearing the capacity of our ranges. At best, range capacity is highly variable; wet years mean good ranges, but drought means dry grass and possibly forced herd reduction. Today's best evidence indicates that the persistent 4-percent annual increases in the demand for beef will soon push herds even nearer the limit of range capacity. The result is likely to be upward pressure on prices of range land and of forage-consuming livestock, especially feeder calves. These pressures can be expected to cause changes in industry structure. They may lead to the use of more grain, especially milo, to supplement ranges. The cow herd enterprise may compete with the feeding enterprise as the cost of forage increases and grain becomes less expensive relative to forage.

Meatpacking is becoming more specialized and tends to be located closer to livestock supplies. Several trends are forcing this. One factor is the rise in wage rates. In attempts to offset labor costs, laborsaving equipment is given high priority in investment. As plants are remodeled and redesigned, location shifts take place when advantageous. These shifts precipitate plant reorganization to obtain maximum benefits from advances in technology. The redesigned plants are automated, located close to sources of supply, and tend to specialize in slaughtering single species. Often they process very little, if any, meat, shipping carcasses instead. At the same time, processing plants tend to locate near their sources of supply--warehouses where meat is stored and plants where livestock are slaughtered. Thus, processing plants are found both in consumption areas and near slaughtering plants. In areas of rapid growth there is deep interest in maintaining the production and transportation cost structure that support this growth. In areas of slower growth or decline there is concern about the causes and the probable persistence of the complex of forces involved.

As meatpacking has become less centralized and more specialized, the market power of the large packer has tended to decrease relative to that of the individual retailer. In the past, the meatpacker controlled valuable brands and many retailers had to rely on the packers' distribution network for wholesale supplies of meats as well as other commodities. As retailers have become larger, their power to choose suppliers and to attach conditions to the size of their purchase orders has increased, giving them more bargaining power. Retailers can decide which brands get shelf space and are seen by consumers. Items that packers sell unbranded to retailers, that go on a retailer's shelf unbranded or under the retailer's brand, tend to have low profit margins for packers. Furthermore, meatpackers have found it increasingly difficult to induce retailers to put packer-branded items regularly on their shelves. Canned and processed meats and soups have been about the only exceptions. In addition, small packers selling federally graded meat, and the use by chains of their own brands have reduced the effectiveness of packer brands. Since retailers cut and package fresh meat in the store, they brand it any way they like. Thus, the retailer is in a position to ask the packer to assume part of the advertising expenses or to reduce the wholesale price if the packer brand is to be displayed.

Because fresh meats are often a major part of their business, packers have searched for ways to get their brands before retail customers and to differentiate their fresh meats from those of their competitors. Realizing that they cannot insure that consumers will see their brands on fresh meats unless they can package the product in the form the consumer buys it, the packers are exploring means of doing this. One promising approach is to sell packaged retail cuts of fresh meat to retailers, thus enabling the retailers to lower labor costs. Attempts are also being made to develop inexpensive techniques for increasing the shelf life of meat. Freezing, drying, and irradiation are under examination. Frozen cuts of meat are available today mainly in specialty outlets in most cities. Some attribute the failure of frozen prepackaged meats to catch on with consumers to the fact that frozen meats are less attractive than fresh, and that, even if the housewife intends to freeze the meat at home, she seems to want to select it fresh and unfrozen. Freeze-drying drastically changes the product and so will probably be used for specialty products. At present it is very costly. Irradiation, in which radioactivity is used to sterlize, has promise, but also is quite costly.

Packers will not soon abandon the fight for brand identity at retail. Retailers, however, may not be enthusiastic about selling meats under packer brands rather than under their own retail brands, even though they would like to reduce in-store operating costs. Most important, hundreds of small packers now have access to retail outlets without having to develop or maintain a brand. Many of these packers rely heavily on Federal grading. Furthermore, some of these small packers are able to compete strongly with the large packers for customers, since the economies of scale in fresh meat production are limited. Economies of size in live animal procurement are nearly nonexistent, and the Federal grading system, the size of the retail chains, and the availability of fast, cheap, common carrier transportation have severely limited economies of size in distribution of fresh meats. As a result, small firms appear to be fully as efficient as large ones in fresh meat production and distribution.

The large retailers also face serious competition. They must buy meat in the wholesale market--very large amounts of meat--and they must buy every week. Even when supplies are light, retailers must have meat to sell, although they can raise prices under such conditions and sell less. When supplies are plentiful and prices falling, retailers must use price specials defensively and buy in unusual quantity at wholesale. So the retailer-packer market position changes as supplies vary from long to short.

Accommodating Changes

The economic factors that lead to changes in the economic position, organization, and location of firms also affect marketing and production associations. For example, breed associations are being challenged by the demand of commercial livestock feeders and producers for maximum-gain and high-yield stock. Both feeders and breeders are being forced to adjust to consumer preferences for lean rather than fat meat.

Eventually, the present systems of selling livestock for slaughter will be completely reorganized. Slaughter livestock will very likely be sold on the basis of a price per pound of dressed carcass. This price will depend on both the quantity and the quality of the lean meat produced. These factors will be determined by an objective grader who will use the Federal grading system or some variant of it. Objective evaluation is one of the necessary conditions for a marketing system that would enable most slaughter livestock to bypass the expensive process of being assembled for sale and then reassembled for slaughter.

The requirements of an optimum livestock marketing system are less complex than might be expected. Such a system would (1) maximize buyer and seller information; (2) maximize market competition; and (3) minimize livestock movement. Specifically, it would enable each potential seller to describe the quality of his livestock to all interested buyers and sell to the highest bidder before physically moving the livestock. Some established markets are attempting to meet these norms by different paths. Different markets for livestock will probably continue to depend on quite different marketing techniques. At present, the main common element is change and pressure for change.

The problems of marketing feeder animals are similar to those of marketing slaughter animals, but the alternatives are considerably different. An increasing number of feeders move through cooperative sales--often auction sales held by producers in areas producing large numbers of feeder stock. A large share of the procurement of feeder stock continues to be done by commission-men or directly by the feeders themselves. Again, the trend is to bypass the terminal market. Even though Federal grading and State-Federal market news are used to buy and sell feeder livestock, there is no technique as objective as the grade-and-yield selling procedures that can be used. Changes in feeder cattle marketing are not likely to approach the magnitude of changes expected in the marketing and assembly of slaughter livestock--at least in the immediate future. Contracting may increase and price reporting will undoubtedly become more precise. Feeders may expand their record-keeping on feeding performance so that the past performance of breeds, areas, and individual herds may become estimators of future feeding performance.

Feeder-pig production has just begun to develop in areas of less intensive land use, a pattern well developed in calf and lamb production. But rapidly increasing demands for meat have led to herd increases so great that grassland is becoming scarce and higher priced. As this happens, feeder-livestock production will become somewhat more dependent on concentrate production.

Several forces will lessen any shift of cow herds to concentrate-producing areas. Producers in some regions will combine grain sorghum production and grazing programs to increase the capacity of their ranges. Still more productive range management techniques will be developed. As range land becomes more expensive relative to corn, more grain will be shipped into range country for use by breeding herds to supplement locally grown feed.

Current livestock production and feeding trends indicate that while a somewhat larger share of cattle feeding will be done in the intermountain West than is done there today, the extent of the change will be limited to an important extent by the local feed supply unless a major shift in transportation rate structure occurs. The Corn Belt will most likely continue to be the principal feeding area for cattle, hogs, and sheep.

An increasing share of hog production will take place on specialized feeder-pig and hog-feeding farms, as areas on the fringes of the Corn Belt specialize in producing and selling feeder pigs and Corn Belt farmers increasingly specialize in feeding.

In view of these shifts, many communities are deeply concerned about their position as potential locations for packing plants. The High Plains, Intermountain, and Pacific coast States will probably slaughter the livestock they feed and increase their share of the slaughtering industry, but slaughtering will continue to be heavily concentrated in the Corn Belt.

This projection assumes that no organized group will gain predominance in control of livestock-feeding operations, that packers will not significantly extend their livestock feeding by contracting or any other method, and that chainstores will not move into livestock production and feeding. More significantly, it assumes that the recent growth of cattle feeding in Colorado, Arizona, and California will continue at a much slower rate as the cattle cycle turns and as range capacity becomes more restrictive.

In general, the outlook is for more efficient meat production and marketing. Should food-grain prices be allowed to fall to levels competitive with feed-grain prices, part of the food-grains produced would go to sustain the expanded livestock breeding herds as they outgrow range capacities, and as feed for finishing livestock. The result would be lower livestock feeding costs and potentially greater livestock and meat production. The increase in beef production will be accelerated as decreasing dairy herds continue to use a smaller share of feed-grain production. This effect will be slightly offset by an increasing demand for grain for poultry feed. The expected net result is higher per capita meat consumption, with meat probably available to consumers for an even smaller share of their increasing incomes.

SUMMARY

The livestock-meat economy is national in the sense that livestock are marketed in virtually every agricultural community, and certainly meat is sold in every retail shopping center. Various economic advantages have led to area specialization and long-distance transportation of inputs and products. Changes in economic circumstances have led to important conflicts among regions, market levels, and forms of organization.

Rapid and significant shifts are taking place in livestock production and feeding, and in slaughtering, transportation, and processing. Farms and firms in all parts of the livestock industry and in all sections of the United States continue to face the unending prospect of accommodating these forces or being replaced by more aggressive competitors.

In livestock production and feeding, a number of significant trends have been associated with the increased importance of cattle feeding. The demand for feeder calves has increased until ranges are near the point of maximum use even though new range areas have been developed, new management techniques have increased the capacity of ranges, and cows have replaced first horses (as horsepower became obsolete for most farm jobs), and then sheep on many grassland acres. Grass for calf and sheep production will probably need to be supplemented by grain to an ever increasing extent to meet tomorrow's demand for calves.

Since World War II, cattle feeding in the Far West has increased until the west coast is nearly self-sufficient in fed-cattle production. Colorado, Arizona, and California, along with other States in the High Plains and intermountain West, have led in the development of very large feedlots. These operations tend to be highly commercial, distinct from the pattern in the Midwest where feedlots are but one part of the general farming enterprise. Cow herds in the South have become increasingly important sources of feeder calves for these new feedlots. A part of this development has been the challenge to the traditional concepts of breed quality. Crossbred cattle that gain rapidly and yield high proportions of lean meat are beginning to compete successfully with established beef breeds.

Hogs are still principally produced on general crop-livestock farms in the Corn Belt. In some areas, mainly on the fringe of the Corn Belt, producers are specializing in feeder-pig production and selling pigs to Corn Belt feeders who feed them to maturity. In other cases, pig factories are producing and feeding pigs on a large scale. Both these developments currently represent a small but growing proportion of the industry.

Meatpacking has continued to move closer to the source of livestock production. In 1920, most livestock slaughter took place close by terminal markets or principal points of meat consumption in large cities. The development of good roads, efficient trucks, and efficient small power plants has reduced the advantage formerly held by large plants and large firms in assembly, slaughter, and distribution. Federal grades for beef and lamb further reduced the cost of entering the industry, and hundreds of small firms became serious competitors of the large meatpackers. Between World Wars I and II, meatpacking plants in the livestock producing areas became increasingly important. In the midfifties many large, full-line plants located at terminal markets were closed as slaughter shifted even nearer to livestock production areas.

Since World War I, livestock marketing has changed at almost every stage. The vast terminal markets that once handled nearly every livestock sale now operate at part capacity in many cases and have disappeared altogether in others. Packers buy most livestock directly from farmers and move them to specialized, highly efficient plants nearby. The meatpacking industry has increasingly been characterized by fast-growing, highly specialized firms, small by the standards of the largest packers who once dominated the industry (and have seen their share of the livestock slaughter gradually but steadily diminish in recent years). These packers typically use Federal grade and other specifications to sell a highly uniform product to very large retail firms in great quantity. These tranactions are made on the basis of quality specifications over the telephone, without personal inspection of the meat in question.

In spite of the many changes and the impressive areas of progress in the livestock-meat industry, there has been little change since Biblical days in the way most livestock are bought and sold. Buyers and sellers of slaughter livestock argue about quality and the yield of lean meat in ways not very different from those used in ancient times.

Livestock marketing today appears to be nearing a shift to substantially more objective methods of quality appraisal. A steady trend toward selling livestock on the basis of carcass weight and quality has been observed for several years. The development of a widely accepted and used system of selling slaughter livestock on a carcass basis may be the key to the develoment of an advanced livestock marketing system that will not only take the guesswork out of buying and selling slaughter livestock but will reduce transportation cost and increase competition at the same time.

Through all of this discussion, the theme of change constantly reappears. These forces that cause change have many dimensions and forms--technology, demand, organization, and management, among others. Past changes hold important lessons for accommodating future forces of change. The overall prospect is for more efficient meat production and marketing.

SELECTED REFERENCES

(1) Abel, H.
1950. Shifts in the Trade in Western Slaughter Livestock. U.S. Dept. Agr., Agr. Inform. Bul. 14.

(2) ________, and Broadbent, D. A.
1952. Trade in Western Livestock At Auctions: I. Development, Relative Importance, and Operations. Utah Agr. Expt. Sta. Bul. 352.

(3) Agnew, D. B.
✓ 1964. Meatpacker Costs for Slaughtering Hogs and Distributing Fresh Pork. U.S. Dept. Agr. ERS-160, Feb.

(4) Agricultural Marketing Service
1953. Marketing Margins for Beef. U.S. Dept. Agr., Dec.

(5) ________
1956. Beef Marketing Margins and Costs. U.S. Dept. Agr. Misc. Pub. 710, Feb.

(6) ________
1956. Pork Marketing Margins and Costs. U.S. Dept. Agr. Misc. Pub. 711, Apr.

(7) ________
1957. Lamb Marketing Costs and Margins. U.S. Dept. Agr. Mktg. Res. Rpt. 159, Apr.

(8) ________
1963. Livestock Purchases by Packers Through Different Outlets, 1960-61, U.S. Dept. Agr., Packers and Stockyards Div., Spec. Inform. Release, May.

(9) ________
1963. Resume Vol. I, No. 3. U.S. Dept. Agr., Packers and Stockyards Div., Sept.

(10) ________
1964. Resume. Vol. II, No. 2. U.S. Dept. Agr., Packers and Stockyards Div., Dec.

(11) ________
1965. Resume. Vol. III,. No. 11. U.S. Dept. Agr., Packers and Stockyards Div., Nov.

(12) Davis, L.
1957. Marketing Aspects of Fattening Lambs in the Mountain States, 1954-55. Utah Agr. Expt. Sta. Bul. 402.

(13) Dietrich, R. W., and Williams, W. F.
1959. Meat Distribution in the Los Angeles Area. U.S. Dept. Agr. Mktg. Res. Rpt. 347, July.

(14) Dowell, A. A., and Engelman, G.
1949. Marketing Slaughter Cattle by Carcass Weight and Grade. Minn. Agr. Expt. Sta. Tech. Bul. 181.

(15) ________, and Gaarder, R. O.
1958. Marketing Meat-Type Hogs. U.S. Dept. Agr. Mktg. Res. Rpt. 227, Apr.

(16) Engelman, G., and Pence, B. S.
1958. Livestock Auction Markets in the United States. U.S. Dept. Agr. Mktg. Res. Rpt. 223, Mar.

(17) Farstad, E., and Brensike, V. J.
1952. Costs of Retailing Meat in Relation to Volume. U.S. Dept. Agr. Mktg. Res. Rpt. 24, Aug.

(18) Gerrity, M. V., and Johnson, H. D.
1956. Motortruck Transportation of Freshly Killed Beef., U.S. Dept. Agr., Mktg. Res. Rpt. 119, June.

(19) Hacklander, D. D.
1964. Marketing Spreads for Beef and Pork. U.S. Dept. Agr. ERS-105, Dec.

(20) ________, and Gaarder, R. O.
1963. Selected Data on the Size of Hog Operations on Farms in the United States. U.S. Dept. Agr. LMS-128, Jan.

(21) Hiemstra, S. J.
1962. Concentration and Ownership in Food Manufacturing Industries. U.S. Dept. Agr. MTS-146, Aug.

(22) McKintosh, K.
1959. Characteristics of Livestock Slaughter Plants in Northeastern United States. W. Va. Agr. Exp. Sta. Bul. 428.

(23) ________
1961. Marketing Practices and Procedures of Northeastern Livestock Producers. W. Va. Agr. Exp. Sta. Bul. 457.

(24) Marion, B.
1964. What's Happening in Food Retailing? Ohio Coop. Ext. Serv. Timely Econ. Inform. 436, June.

(25) Motes, W. C.
1963. Adjustments in Retail Prices of Beef to Supply Changes. U.S. Dept. Agr. ERS-123, May.

(26) ________, Hacklander, D. D., and Bullock, J. B.
1965. Price Spreads for Beef and Pork. U.S. Dept. Agr. ERS-104, Feb.

(27) Phillips, V. B.
1958. Hired Truck Transportation in Marketing Livestock. U.S. Dept. Agr. Mktg. Res. Rpt. 297, Dec.

(28) ________, and Engelman, G.
1958. Market Outlets for Livestock Producers. U.S. Dept. Agr. Mktg. Res. Rpt. 216, Mar.

(29) ________, Pence, B. S., and Wilson, D. L.
1960. Marketing Costs and Margins for Livestock and Meats U.S. Dept. Agr. Mktg. Res. Rpt. 418, Nov.

(30) Southern Livestock Marketing Research Committee
1959. Slaughter Cattle Trade on Southern Auctions South. Coop. Ser. Bul. 65.

(31) Stout, R.
1957. Marketing Cattle and Calves Through Southern Auctions South. Coop. Ser. Bul. 48.

(32) Tuthill, D. F., and Tompkins, E. H.
1961. Analysis of Livestock Dealer Operations in Maine and Vermont. Maine Agr. Exp. Sta. Bul. 598.

(33) U. S. Bureau of the Census
1957. Concentration in American Industry. Report of the Subcommittee on Antitrust and Monopoly to the Committee on the Judiciary, U.S. Senate, 85th Cong., 1st Sess.

(34) Federal Trade Commission
1957. Industrial Concentration and Product Diversification in the 1,000 largest Manufacturing Companies: 1950.

(35) ________
1960. Economic Inquiry into Food Marketing: Part I. Concentration and Integration in Retailing.

(36) U.S. Tariff Commission
1964. Beef and Beef Products. T. C. Pub. 128, June.

(37) Volz, M. D., and Marsden, J. A.
1963. Centralized Processing of Fresh Meat for Retail Stores. An Interim Report. U.S. Dept. Agr. Mktg. Res. Rpt. 628, Oct.

(38) Williams, W. E., Bowen, E. K., and Genovese, F. C.
1959. Economic Effects of U.S. Grades for Beef. U.S. Dept. Agr. Mktg. Res. Rpt. 298, Jan.